

Remarks/Arguments

Claim Summary

By this Amendment, claims 1, 16 and 26 have been revised.

Claims 1-26 remain pending in the application.

Request To Withdraw Finality

The final Office Action contains a new rejection of claim 26 which was not necessitated by Applicants previous amendment.

In particular, the Examiner has rejected claim 26 (which depends on claim 1) on the grounds that *“it is unclear what the step of the process the processing parameters of claim 26 referring to, a, b, or c step.”*

No amendments were made to claim 26 in Applicant’s previous response. Further, the amendments to claim 1 did not take away from or add to the existence of the three steps a, b and c in claim 1. In other words, the amendments to claim 1 are not relevant to the Examiner’s new rejection of claim 26.

Applicants therefore request that the finality of the Office Action be withdrawn.

35 U.S.C. ¶112, first and second paragraphs

Without acquiescing to Examiner’s reasoning, the word “distinctly” has been deleted from claim 1.

Further, by this Amendment, claim 26 has been revised to overcome the Examiner’s new rejection under 35 U.S.C. ¶112, second paragraph.

35 U.S.C. ¶103

Claims 1-10 and 13-26 were rejected under 35 U.S.C. ¶103 as being unpatentable over Laermer et al. (US 5501893) in view the alleged admitted prior art (APA) for the reasons stated at pages 2-5 of the Office Action. Applicants respectfully traverse this rejection with respect to the now-pending claims.

In the Office Action, the Examiner states:

“Laermer describes an etching method for comprising repeatedly performing the steps: etching a material using a plasma (col. 3, line 68); depositing a passivation layer on the surface of the etched feature (col. 4, line 26). The second etching step would selectively removing the passivation layer from the base of the etched feature in order that the etching proceeds in a direction perpendicular to the material (col. 4, line 54-56). This would read on claimed step c partially removing the passivation from the surfaces of the etched feature in order the etching of subsequent etching process cycles proceeds in a direction substantially perpendicular to the film surface. Also the second step would be a separate and distinctly from the first etching step of the cycle since it also remove the passivation layer.”

By this Amendment, independent claim 1 has been revised to clarify that step (c) of each cycle is performed separately from step (a) of each next cycle. Thus, the amended claim 1 precludes that Examiner’s interpretation of Laermer in which the second etching step of Laermer allegedly reads on the selective removal of the passivation layer of step (c) of claim 1.

Further, it appears that the Examiner has attempted an argument to the effect that Laermer does describe a three-step process in which step 1 (the etching step) is an etching step in a first etch cycle, step 2 (passivation) is the deposition of a passivation layer in the first etching cycle, and step 3 (partial removal of the passivation layer) is provided by the etching step in the next etching cycle. This interpretation is completely unsustainable, because claim 1 clearly specifies that each etching process cycle includes performing the steps (a), (b), (c). In other

words, it is clear from claim 1 that the three steps referred to are all performed in a single etching process cycle. As discussed previously, Laermer relates to a two-step process whereas claim 1 refers to a three-step process, and the Examiner's attempt to interpret Laermer as a three-stop process places Laermer clearly outside of the scope of present claim 1.

In Laermer, it is the directionality of the accelerated ion bombardment that enables the passivation layer removal process to be successful and selective, and this directionality is only available in the presence of a plasma. Thus, if (hypothetically) a non-plasma etching technique was substitute into the method of Laermer in place of the disclosed plasma-etching step, the resulting, hypothetical technique would not work satisfactorily, because the passivation layer would not be removed satisfactorily. In other words, Applicants disagree with the Examiner's comment that it would be obvious to use a non-plasma etching or deposition technique with a reasonable expectation of success. There would not be a reasonable expectation of success: to the contrary, there would be an expectation of failure. The present invention overcomes this (hypothetical) difficulty by providing the third, separate, step (c) of partial and selective passivation layer removal, which thus can ensure that the etching proceeds in the desired direction perpendicular to the material. The innovation provided by the present invention allows for the first time the use of a non-plasma etchant or deposition step in the alternating etching/deposition technique.

With respect to Claim 16, the Examiner's objection appears to be that the polymer as defined therein might not be made entire of "pure" $n(C_xF_y)$ units. With respect, this is not the way in which a skilled person, such as a practicing chemist, would interpret the description of the polymer given in claim 16. However, for the avoidance of doubt, claim 16 has been amended to recited that the polymer is a per-fluoro polymer of formula $n(C_xF_y)$. This simply makes explicit what one of ordinary skill would already understand. It is noted that at page 22, lines 3 to 6, of the present specification, an example is given in which a fluorocarbon gas source (such as C_4F_8), optionally in an inert carrier gas, is introduced into a chamber and

polymer subsequently deposited. The skilled person would immediately understand that with these starting materials, the deposited polymer must necessarily be a perfluorocarbon polymer.

For at least the reasons stated above, Applicants respectfully contend that claim 1, and claims 2-26 dependent thereon, define over Laermer et al., taken alone or in combination with the APA.

Conclusion

No other issues remaining, reconsideration and favorable action upon the claims 1-26 now pending in the application are requested.

Respectfully submitted,

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